On Some Statistical Models in Life Testing

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In this paper we consider a hazard rate of the form $h(t;\lambda)=kt+\varphi(t;\lambda)$, where $\varphi(t;\lambda)$ is (in most of the cases) a decreasing function as regards t. Various choices for k and φ provide interesting statistical models (such as the Rayleigh model, a generalized exponential model and a Burr-type model) with applications in life testing and reliability.

We will study the so called pseudo – Hjorth distribution function (nicknamed after the model proposed by the Swedish statistician Urban Hjorth in 1980), which has some interesting properties, as for instance the maximum of hazard rate being equal to the parameter distribution. This model can be also applied in the acceptance sampling, relating the fraction defective to the hazard rate.